

Biological Assessment for the North 40 Scrub Project

On the Ocala National Forest

Marion County, Florida
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1.0 INTRODUCTION

This Biological Assessment documents the analysis and rationale for the determination of effects for a specific planned Forest Service (FS) activity on federally threatened, endangered, or sensitive (TES) wildlife species. The Biological Assessment serves to: ensure that FS actions do not contribute to loss of viability or trends towards Federal listing for all TES species; comply with requirements of the Endangered Species Act of 1973 (ESA) that actions of Federal agencies not jeopardize the continued existence of listed species or adversely modify critical habitat of listed species; and provide a process and standard by which to ensure that threatened, endangered, proposed, and sensitive species receive full consideration in the decision making process. Consult the Forest Service Manual, Section 2672.4 for a detailed discussion on objectives and standards for Biological Evaluations.

This Biological Assessment(BA) considers the potential effects of the North 40 Scrub Project on TES wildlife species. The best available science on TES wildlife species was used to document this consideration of potential effects, including recent scientific literature, correspondence with knowledgeable individuals in scientific/land management professions, field surveys, and personal observation. Recent scientific literature used in the document is included in the references section.

The wildlife species addressed in this document were selected from the Florida Federal Endangered Species List from the USFWS (Table 1). Although not federally listed, the Bald Eagle was included in the analysis to communicate compliance with the Bald and Golden Eagle Protection Act. Appendix I contains five listed species that occur in or near the Ocala National Forest (ONF) but have no detailed effects analysis within the document because the project area does not contain suitable habitat or is outside the known range of the species.

Table 1. Federally Listed Wildlife and Plant Species Included in Analysis

Taxa	Scientific Name	Common Name
Bird	<i>Apelocoma coerulescens</i>	Florida Scrub-Jay
Reptile	<i>Drymarchoncoraiscouperi</i>	Eastern Indigo Snake
Reptile	<i>Neosepsreynoldsi</i>	Sand Skink
Plant	<i>Bonamia grandiflora</i>	Florida Bonamia
Plant	<i>Eriogonumlongifolium</i> var. <i>gnaphalifolium</i>	Scrub Buckwheat
Plant	<i>Polygala lewtonii</i>	Lewton's Polygala
Plant	<i>Clitoria fragrans</i>	Scrub Pigeon Wings

2.0 CONSULTATION HISTORY

In accordance with the Endangered Species Act of 1973, as amended, and pursuant to Section 7 of said act, formal consultation on the Biological Assessment for the Revised Land and Resource Management Plan for National Forests in Florida was requested by the Regional Forester in a letter dated September 18, 1998 (USDA Forest Service 1999). On December 18, 1998, the U.S. Fish and Wildlife Service issued a Biological Opinion (FWS Log #98-891) on the Revised Land and Resource Management Plan.

The Biological Opinion concurred with the Forest Service's "not likely to affect" determination for 13 federally listed species, and provided terms and conditions for incidental take for five wildlife species that received a "may affect" determination. The Biological Opinion also stated that the "level of anticipated take [was] not likely to result in jeopardy to the species" for the Florida Scrub-Jay, Red-cockaded Woodpecker, Eastern Indigo Snake, Sand Skink, Flatwoods Salamander, and Flatwoods Salamander critical habitat (USDA Forest Service 1999). Issuance of the Biological Opinion concluded all formal consultation on the Revised Land and Resource Management Plan for National Forests in Florida.

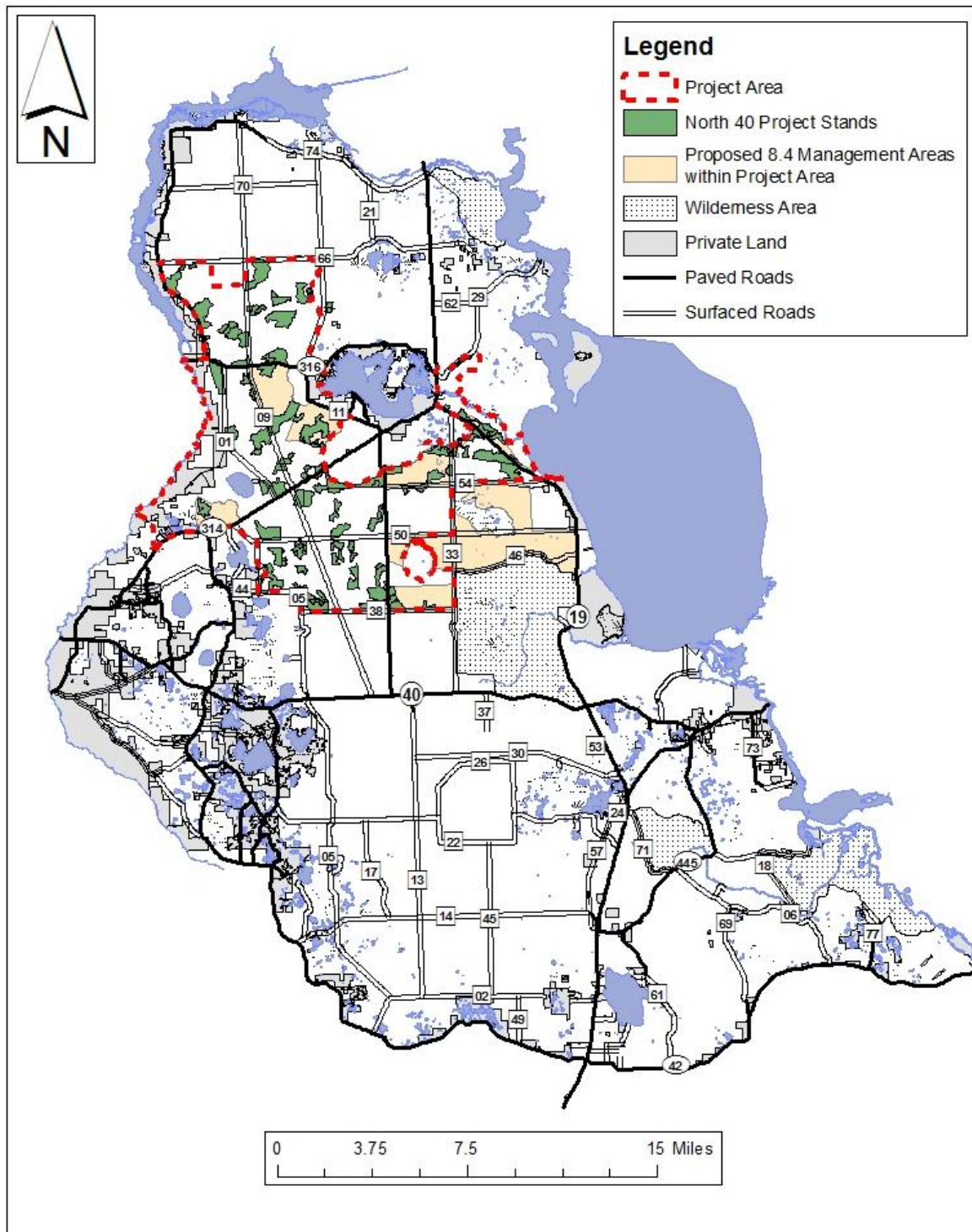
An Amendment (Amendment #12) to the Revised Land and Resource Management Plan for National Forests in Florida has been proposed that would change the Management Area designation on ~50,000 acres from Management 8.2 (Sand Pine, Mixed Regeneration, Moderate Openings) to Management Area 8.4 (Florida Scrub-Jay Management Area), including land that is part of this project. The Forest Service has already undergone the Section 7 Consultation process with the US Fish & Wildlife Service for this proposed Amendment. A Biological Opinion was issued on June 14, 2016 (FWS Log #04EF 1000-2016-F-0215) in response to the Biological Assessment for Amendment #12. This Amendment is currently undergoing the NEPA (National Environmental and Policy Act) process and would be instituted once a Decision Notice is signed by the Forest Supervisor. Should the Amendment not get approved, all areas would be continued to be managed under the current management area designations.

3.0 PROPOSED ACTION AND ALTERNATIVES

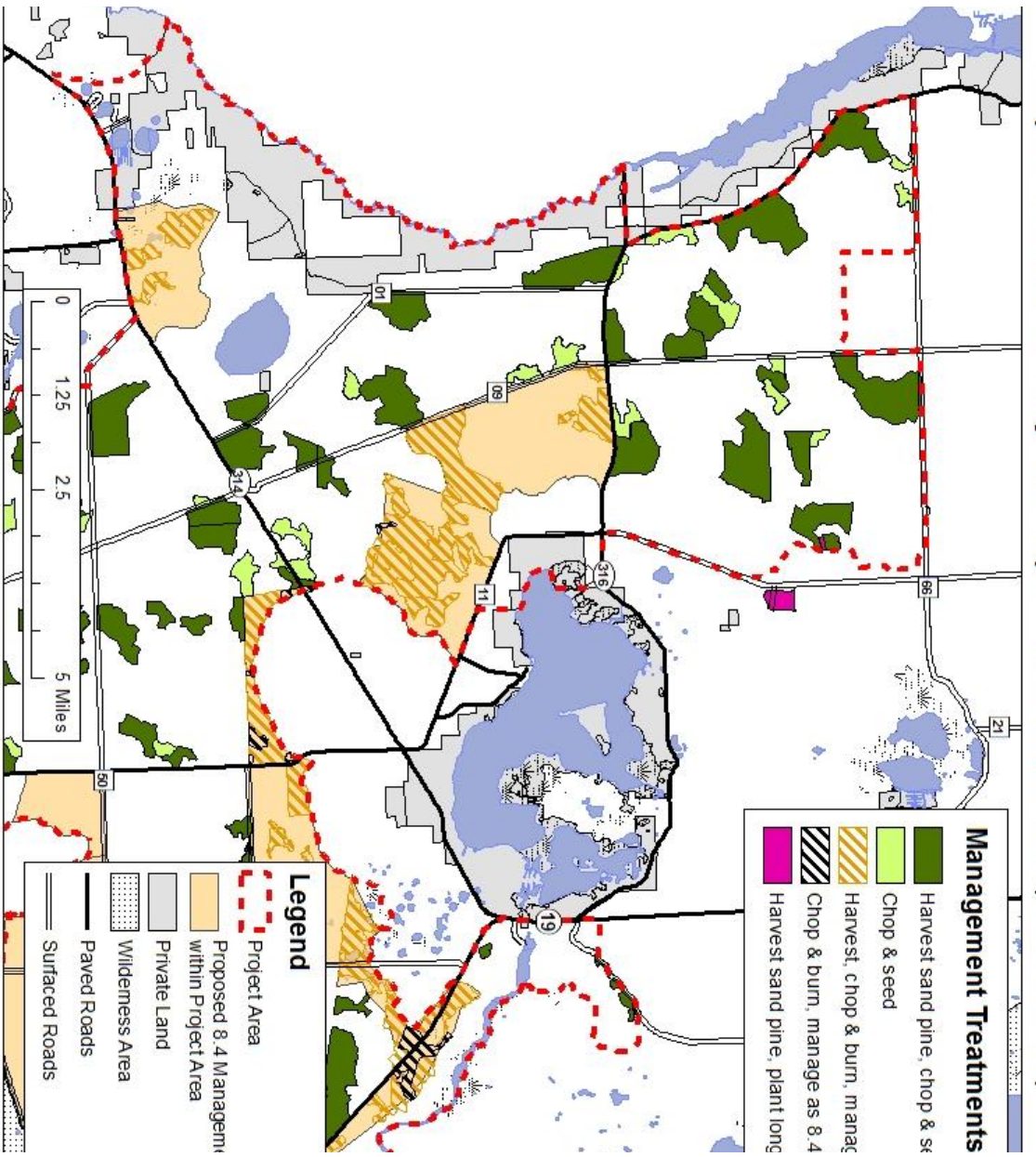
This project is located with Management Area 8.2 (Sand Pine, Mixed Regeneration, Moderate Openings). Note that changes in the desired condition for MA 8.2 and two guidelines (8.2-3 and 8.2-7) have been implemented under LRMP Amendment #8. Also refer to the Amendment 8 Replacement Pages for the changes to the Desired Future Conditions (available at <http://www.fs.fed.us/r8/florida/ocala/resources/planning.php?p=1.1.6.1>). See discussion above on pending Amendment #12.

The Ocala National Forest is proposing to implement the North 40 Scrub Project (see Maps #1 - #3). This project would create over 12,000 acres of scrub openings and includes wildlife, timber management, fuels, forest products, prescribed burning, and road maintenance activities. The proposed actions are described below and evaluated with regard to their potential effects on federally listed species.

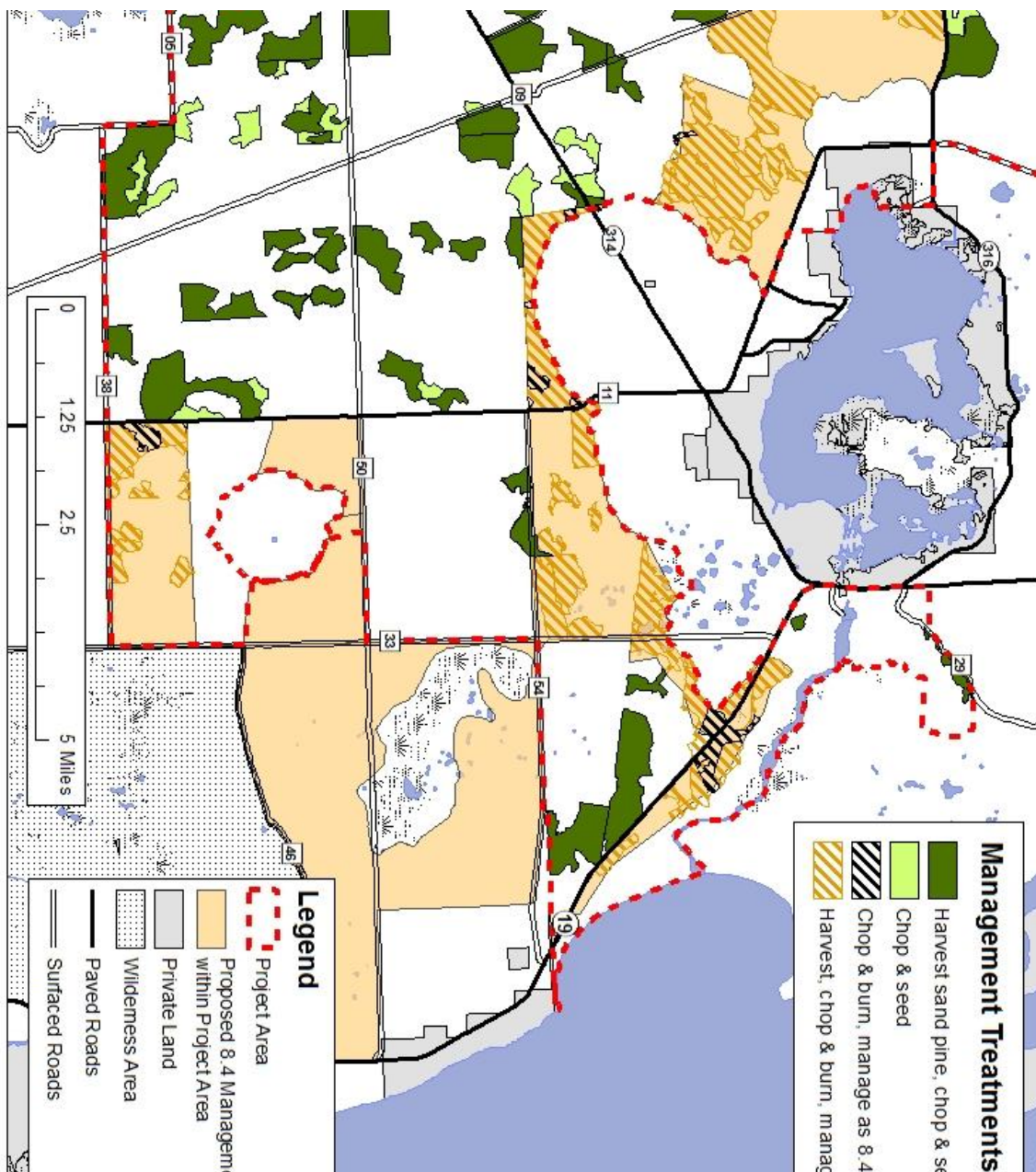
Map 1. General Vicinity Map



Map 2. North 40 Project Proposed Treatments (West View)



Map 3. North 40 Project Proposed Treatments (East View)



3.1 Proposed Action

The activities described for the proposed action are proposed for an area located on National Forest lands in Marion County, Florida and involves over 12,000 acres within 31 compartments on the Lake George Ranger District. (Note that some stands may have more than one proposed action occurring within their boundaries.)

The proposed actions are:

- Harvest sand pine and re-seed with sand pine on approximately 6,900 acres. Harvest of crookedwood may occur prior to sand pine harvest. Roller-chopping and post-harvest prescribed burning may occur after harvest and before seeding.

- Harvest sand pine and manage as early successional scrub on approximately 2,640 acres. Harvest of crookedwood may occur prior to sand pine harvest. Stands may be roller-chopped and/or burned after a final harvest.
- Roller-chop and re-seed with sand pine on approximately 1,280 acres.
- Roller-chop and/or prescribed burn and manage as early successional scrub on approximately 1,470 acres.
- Harvest sand pine and replant longleaf pine on approximately 80 acres.
- Perform road work to necessary support harvest operations, mostly resurfacing with some reshaping of existing road surfaces.

Proposed Actions in Detail

Harvest of crookedwood and sand pine. Stands of merchantable sand pine would be sold in fiscal year 2017 and/or 2018, and harvest activities must occur within three years of sale. Crookedwood (*Lyonia ferruginea*) harvests may be conducted in project stands prior to harvest via permit. During crookedwood harvest activities, the trunks of the crookedwood plant are cut at the base. The rhizomatous stems grow back after cutting.

Roller-chopping. This site preparation method uses large drums with 0.75 to 1.0 inch long blades that are spaced 12 to 18 inches apart. Chopper blades sink 8 to 10 inches into the soil and typically disturb 90% of vegetation less than 6 inches in diameter. Chopping breaks down post-harvest logging debris, prepares the seed bed, and moderates oak resprouting. A roller-chopping layout that leaves intermittent areas of undisturbed vegetation (i.e., the “sloppy chop”) is encouraged to promote small-scale habitat variability. Roller-chopping treatments would be performed within 18 months of harvest.

Post-harvest prescribed burning. Post-harvest prescribed burns are conducted to benefit various TES species by providing effects such as decreasing coarse woody debris and improving germination and resprouting of fire-adapted plant species. The effects of prescribed burning on TES species are also addressed in the Biological Evaluation of the Effects of Prescribed Burning on Proposed, Endangered, Threatened and Sensitive Wildlife Species (USDA Forest Service 2006). Prescribed burning provides open areas for scrub-jays and mimics some of the natural effects on plant dynamics that historically came from wildfires.

Maintenance prescribed burning. Maintenance prescribed burning is done to set back succession and maintain quality scrub habitat for the Florida Scrub-Jay and many other species that require or favor early successional oak scrub. This type of burning would be done once scrub habitat has become unsuitable or nearly unsuitable for Scrub-Jays. Stands generally become unsuitable when the oak shrub layer becomes too tall (over 9 feet in height) and crowded. Scrub stands may be roller-chopped prior to burning in order to rearrange fuels and reduce flame heights. Maintenance burning would only be done in Management Area 8.4, and the stands included in this project are contingent upon approval of Forest Plan Amendment #12.

Reforest sand pine scrub. Regeneration activities (seeding) would be carried out within 12 to 15 months of harvest and would occur after roller-chopping or prescribed burning activities. Seeding uses a farm tractor with attachments that drop sand pine seeds in an arrangement providing 6' x 8' spacing throughout the stand. Cables on the front and back of the tractor prepare the soil and cover

up the seed after it is dropped. In stands that appear to have sufficient natural regeneration, no seeding will occur, or every other row will be seeded.

Manage as early successional scrub. About 2,573 acres would be harvested within stands proposed to move to Management Area 8.4. The focus of this Management Area is to provide high-quality habitat for the Florida Scrub-Jay and other scrub endemic species. Stands harvested in this MA would undergo harvest operations but will not be seeded back to sand pine. Stands may be roller-chopped and burned after harvest. For a complete analysis of potential effects on Florida Scrub-Jays and other federally listed or sensitive species, consult the Biological Assessment and/or the Environmental Assessment for Forest Plan Amendment #12.

Harvest sand pine, replant with longleaf pine. An old sand pine seed orchard would be harvested of its sand pine and replanted with longleaf pine seedlings.

Perform road work. Roads necessary to support harvest operations will be resurfaced or reshaped to support logging trucks. Clay or rock may be added to some areas and ditches may be re-pulled.

All proposed actions described above in the current project are consistent with and do not exceed the scope of activities described within the Revised LRMP and subsequent amendments (including the pending Amendment #12).

3.3 Design Criteria

Design criteria are included to minimize or eliminate potential negative effects of proposed actions. General measures are listed below as well as specific applicable criteria cited from the Forestwide Standards & Guidelines section of the LRMP. Project-specific criteria are generated for this project or suggest a stricter application of an existing Standard or Guideline.

General Measures

Incorporate Best Management Practices (State of Florida guidelines) to prevent any adverse effects to water or wetlands.

Maximizing the potential for beneficial effects and minimizing the potential for adverse effects on Threatened, Endangered and Sensitive (TES) plant and animal species.

Minimizing the potential for introduction and spread of non-native invasive species (NNIS) such as cogon grass, Japanese climbing fern, and Japanese mimosa as a result of timber sales or other mechanical activities.

Locating and protecting heritage resource sites utilizing the zone archeologist.

Emphasizing prescribed burning to enhance habitat for TES species.

Promoting the scenic and environmental goals of the Florida National Scenic Trail (FNST) by using trail protection measures as outlined in the FNST Certification Agreement.

Promoting public safety and protecting resources adjacent to motorized trails.

Using normal road obliteration procedures that are part of timber sale administration to ensure that new unauthorized motorized trails are not created.

Ensuring that short-term uses would sustain or increase long-term ecosystem productivity.

Ensuring there is no irreversible commitment of resources.

Timber Production Measures

Use the following restocking level as guides in conjunction with professional judgment to determine acceptable restocking based on the likelihood that additional efforts will greatly increase stocking, site capability for timber production, and ecosystem health objectives. Sand pine: 200 (lower level) – 1,500 (upper level). (LRMP 3-20 VG-21)

Use clearcut as the preferred method of final harvest in sand pine. Use all other silvicultural practices to meet site-specific needs. (LRMP 3-20 VG-25)

During sand pine harvesting, leave as many standing snags as possible. If an average of one snag per acre is not present, leave live trees to bring the total to one per acre. Where possible, to enhance visual quality, leave clumps of up to 4 trees. (LRMP 3-20 VG-26)

Decide, on a case-by-case basis, to protect oak scrub stands or convert them to sand pine stands. Scrub-jay habitat suitability is one of the considerations in the decision. (LRMP 3-20 VG-27)

Watershed and Air

Clearcut harvesting will not occur within 35 feet of lakes and ponds 2 acres or larger, seasonal lakes and ponds, and all sinkholes that open to the Florida aquifer, as set forth in the Revised 2000 Silviculture Best Management Practices Manual. (LRMP 3-24 WA-2 and WA-3)

During prescribed burning operations, suppressant foam will not be applied within wetland ecotones when wetlands are holding water, and foaming agent containers will not be rinsed in wetlands. (Prescribed Burning BE)

Wildlife Protection Measures

Protect bald eagle breeding areas by meeting the guidelines established in the most recent version of the National Bald Eagle Management Guidelines. (Forest Plan Amendment #8)

Indigo snakes and gopher tortoises will be avoided or otherwise protected from harm when encountered by personnel, cooperators, or contractors engaged in activities that endanger individual specimens. (LRMP 3-29 WL-10)

Timber contractors undergo an educational program that includes information on the physical characteristics of indigo snakes, life history, and types of habitats where the snake is found. Contractors are also instructed to comply with Standards and Guidelines WL-10-12. This measure is as put forth in the Biological Opinion for the Revised LRMP.

Field personnel and contractors will be educated in gopher tortoise burrow identification. In potential gopher tortoise habitat, establishing log landings, designating skid trails, and parking

equipment within 25 feet of known gopher tortoise burrows is prohibited. Equipment operators will be instructed to maintain a 25-foot distance during operations when previously unknown burrows are encountered. (LRMP 3-29 WL-11; amended in Forest Plan Amendment #8)

Project-Specific Criteria

If Florida Scrub-Jays are present in stands considered to be regeneration failures, then scheduled site preparation activities (e.g., roller-chopping, burning, seeding) will not occur.

No roller-chopping activities will occur from May to August to prevent destruction of the eggs or young of ground-nesting birds and herpetofauna.

If actively occupied striped newt ponds are discovered within or adjacent to the project area, the potential habitat of any terrestrial striped newts would be protected from roller-chopping with a 700-foot radius buffer from the occupied wetland margin.

4.0 FEDERALLY ENDANGERED AND THREATENED WILDLIFE SPECIES

A note on the Bald Eagle:

Although no longer on the Endangered Species List, the Bald Eagle is protected by the Bald and Golden Eagle Protection Act. In order to comply with the Act, we are transmitting information regarding eagle nests and the proposed activities. Four eagle nests are within the 660-foot activity buffer described in the National Bald Eagle Management Guidelines. All four nests' buffers intersect with proposed chopping and burning activities in a proposed 8.4 Management Area. The Forest Service will adhere to the National Bald Eagle Management Guidelines during implementation of these treatments. Prior to treatment, nests will be checked for activity status. If active, treatments will be delayed until outside the breeding season. Mechanical treatments also may be adjusted so that they do not fall within the 660-foot buffer and therefore could be conducted during the breeding season if needed. If the nests in question are inactive, then treatments will proceed. The proposed activities would not negatively affect the species' ability to breed, feed, or shelter either during or after treatment.

4.1 Species Not Considered

Potential effects on four endangered species are not considered because treatment area is outside the established range of the species or does not contain habitat associated with the species. **The proposed actions will have no effect on these species.** A list of species not considered and short explanations are in Section 7 below.

Effects of the Proposed Action

4.2 Florida Scrub-Jay (*Aphelocoma coerulescens*)

Direct effects

Sand pine harvest operations would only occur in stands older than 30 years and thus would not impact Florida Scrub-Jay habitat. Post-harvest chopping, post-harvest burning, and seeding would

occur post-harvest but prior to the age habitat is suitable for scrub-jays. Maintenance burning and pre-burn chopping outside of the nesting season would not directly impact Scrub-Jays because individuals could easily evade machinery or fire. Maintenance burning or pre-burn chopping during nesting season would introduce mortality risk to a limited number of eggs, nestlings, and fledglings. This limited number would not be significant relative to Scrub-Jay populations on the local or landscape scale. For an in-depth analysis of management impacts on Scrub-Jays within Management Area 8.4, consult the Biological Assessment for Forest Plan Amendment 12 (available at: <http://www.fs.usda.gov/project/?project=48051>).

Indirect effects

Harvest operations indirectly benefit scrub-jays by creating early successional sand pine scrub habitat. Harvested areas would provide high-quality habitat for scrub-jays within 3-4 years and could provide habitat up to 15 years of age in areas within MA 8.4. Harvest areas also could be used by scrub-jays immediately after timber removal as feeding grounds. Chopping and prescribed burning indirectly benefit Scrub-Jays by regenerating and maintaining Scrub-Jay habitat quality over the long term. Chopping also allows for safer and more effective prescribed burning operations.

Reforestation activities (i.e., seeding) in MA 8.2 could potentially decrease the time habitat remains suitable for Scrub-Jays by promoting sand pine density. However, naturally regenerated stands can also have high pine densities due to factors that influence sand pine seed germination like weather and topography. The transitory nature of early successional scrub and the variety of species that inhabit the scrub dictates that this ecosystem be managed by maintaining a desired level of scrub habitat in certain age classes. This is achieved by harvesting mature stands as others become unsuitable. Reforestation allows managers to reach these desired levels by ensuring sand pine timber stands reach a merchantable age with appropriate stocking levels, thereby allowing harvest treatments and the early-successional habitat they creation to remain feasible.

Cumulative effects

The proposed actions, when considered along with past, present, and reasonably foreseeable actions, will benefit the Florida Scrub-Jay by generating and maintaining habitat for the species. Stands harvested in this project are part of the long-term Forest-wide process of managing the scrub landscape. Future stands harvested in the new Scrub-Jay Management Areas would cumulatively benefit the Florida Scrub-Jay by adding to the sum total acreage of high-quality scrub habitat at the local and landscape levels. No concurrent or future projects are anticipated to create additional effects or amplify effects already identified.

The effects determination for the Florida Scrub Jay is **may affect – likely to adversely affect**.

There is some mortality risk from maintenance chopping or burning activities occurring during the nesting season. This risk is low and the indirect effects from chopping and burning far outweigh the associated risk. This determination mirrors that determination reached in the 1999 LRMP Biological Assessment and the Biological Assessment for Forest Plan Amendment 12.

4.3 Eastern Indigo Snake (*Drymarchon coraiscouperi*)

Effects of the Proposed Action

Direct effects

There would be limited potential for individual Eastern Indigo Snakes to be harmed or killed by heavy machinery or ground penetration from harvest, pre-burn and maintenance roller-chopping,

and post-harvest and maintenance prescribed burning operations. However, individuals are capable of temporarily leaving stands or seeking refuge in a gopher tortoise burrow during disturbances. Gopher tortoise burrows would be marked and avoided per design criteria, thereby making these activities unlikely to cause direct mortality. Although Eastern Indigo Snake eggs not laid in gopher tortoise burrows may be exposed to direct impacts via chopping, design criteria (no chopping May – August; allowing individuals in harm's way to move) decrease the chances of direct impact. Snakes may temporarily leave a stand during treatment, but the large activity range of the species (125-250 ac; Moler 1992) and its ability to use different habitats (USFWS 1999a) mitigate the negative effects of such temporary disturbance. Seeding would not create any direct effects since the activity creates little disturbance and Eastern Indigo Snakes can easily escape a farm tractor.

Indirect effects

Freshly harvested stands would indirectly benefit the indigo snake by creating a variety of microhabitats that would attract prey species and assist in body temperature regulation. Chopping and prescribed burning stimulate ground cover abundance and diversity and increase habitat quality for gopher tortoises. Increased tortoise abundance would indirectly benefit the Eastern Indigo Snake by providing refugia and egg-laying sites. Reforestation does not introduce any indirect effects to the eastern indigo snake since the species uses a variety of habitats. Home ranges would likely shift as project stands mature and nearby stands are harvested or otherwise set back to early successional states. The occurrence of MA 8.2 and 8.4 in close proximity would provide a variety of early successional scrub habitat for the species.

Cumulative effects

The proposed actions, when considered along with past, present, and reasonably foreseeable actions, would cumulatively benefit the eastern indigo snake by creating habitat suitable in sand pine scrub for gopher tortoises which create burrows important for indigo snakes. Continued scrub management (in both MAs 8.2 & 8.4) would perpetuate the landscape-scale diversity that is important to species with large activity ranges such as the indigo snake. No concurrent or future projects are anticipated to create additional effects or amplify effects already identified.

The effects determination for the Eastern Indigo Snake is **may affect – likely to adversely affect**. There exists some potential for individuals to be directly impacted by heavy machinery during harvest, chopping, and burning activities. This potential is minimized by the inclusion of design criteria and the ability of individuals to escape harm by leaving the stand or seeking refuge in protected gopher tortoise burrows. The management actions would improve habitat diversity and promote gopher tortoise use, increasing available refugia for indigo snakes. This effect determination parallels the “may [adversely] effect” determination in the LRMP and in the Biological Assessment for Forest Plan Amendment 12.

4.4 Sand Skink (*Neosepsreynoldsi*)

Effects of the Proposed Action

Direct effects

Harvest and roller-chopping operations introduce a very small mortality risk to sand skinks from ground-disturbing machinery. Harvest operations hold a small probability of impact because merchantable sand pine stands are unlikely to be occupied by sand skinks. Post-harvest chopping operations pose some mortality risk from chopper blades due to the fact that sand skinks are fossorial and spend most of their time 1-8” under the soil (Christman 1992). Since chopping would occur within 18 months of harvest, chopped stands would have a relatively low probability of

occupancy due to low shrub occurrence. Pre-burn chopping (chopping occurring during the maintenance phase) presents a lower risk of harm or mortality for Sand Skinks because the chopper blades would not sink as deep into the ground due to the presence of the shrub layer. Seeding would not create any direct effects since the activity creates little disturbance and the attachments on the seeding tractor only disturb the top inch of soil – not deep enough to directly affect the sand skink.

Indirect effects

Harvest operations would indirectly benefit sand skinks by creating early successional habitat dominated by bare, sandy open ground. Chopping would indirectly benefit sand skinks by stimulating scrub oak regrowth and reducing coarse woody debris, thus increasing the number of feeding sites and prey. Prescribed burning and the overall management regime would indirectly benefit sand skinks by promoting increased bare ground coverage and providing scattered shrub cover, conditions that are potential key habitat factors for the sand skink (McCoy et al. 1999). While reforestation may indirectly impact the sand skink in much the same way as it does the Florida scrub-jay (by shortening the length of time the habitat is suitable), the overall impact is beneficial because the practice allows land managers to treat needed acreages of habitat that cannot be maintained with fire or other means.

Cumulative effects

The proposed actions, when considered along with past, present, and reasonably foreseeable actions, would cumulatively benefit the sand skink by creating and maintaining suitable habitat. Continued scrub management (in both MAs 8.2 & 8.4) would help provide the early successional habitat for this species at the landscape level. No concurrent or future projects are anticipated to create additional effects or amplify effects already identified.

The effects determination for the Sand Skink is **may affect – likely to adversely affect**. There is a small risk of mortality, but habitat quality would improve after treatment. This effect determination parallels the “may [adversely] effect” determination in the LRMP and in the Biological Assessment for Forest Plan Amendment 12. The proposed action would create and maintain habitat for the species.

4.5 Florida Bonamia (*Bonamia grandiflora*)

Effects of the Proposed Action

Direct effects

Harvest operations in stands with sparse canopy cover and roller-chopping prior to prescribed burning operations may disturb the horizontal stems of Florida Bonamia individuals, but the root systems would remain intact and individuals could resprout. A few individual plants may be extirpated in small areas that receive extensive ground disturbance such as log landings. These effects would be localized and would not create a significant impact on the ONF population of Florida Bonamia. Prescribed burning activities would only impact surficial stems and would not be a concern regarding plant mortality.

Indirect effects

The removal of a sand pine overstory in harvest areas would indirectly benefit Florida Bonamia by increasing sunlight penetration to the ground and creating an open environment with large patches of bare ground. Roller-chopping would promote bare ground openings by decreasing coarse woody debris. Prescribed burning would create and maintain openings and stimulate flowering and

germination. Habitat disturbance (fire or mechanical) has been shown to result in higher individual *Bonamia* densities, stem densities, seedling recruitment, flowering, and seed production versus undisturbed areas (Harnett and Richardson 1989). Reseeding in MA 8.2 would indirectly impact plant growth and occurrence over the long term via canopy closure. At that point, the plants would persist in the seed bank until the next harvest or other disturbance occurs.

Cumulative effects

The proposed actions, when considered along with past, present, and reasonably foreseeable actions, would cumulatively benefit Florida *Bonamia* by creating and maintaining suitable habitat. Continued scrub management (in both MAs 8.2 & 8.4) would help provide the early successional habitat for this species at the landscape level. No concurrent or future projects are anticipated to create additional effects or amplify effects already identified.

The effects determination for Florida *Bonamia* is **may affect – likely to adversely affect**. There exists some potential for individuals to be killed by ground-penetrating equipment use. However, this species is adapted to disturbance and can persist via its persistent root system and extensive seed banks in the soil. This effect determination parallels the “may [adversely] effect” determination in the LRMP and in the Biological Assessment for Forest Plan Amendment 12.

4.6 Lewton’s *Polygala* (*Polygalalewtonii*)

Effects of the Proposed Action

Direct effects

Harvest operations are not anticipated to create direct effects on Lewton’s *Polygala* (LP) because mature sand pine stands lack adequate sunlight on the forest floor. There is little available research on the direct impacts of roller-chopping on LP in open stand conditions. Post-harvest and pre-burn roller-chopping may kill individuals located in open bare ground. Lewton’s *Polygala* does not have a trailing vine-like habit or significantly deep root system, and thus individuals could be killed. However, the number of LP individuals impacted is not anticipated to be significant because in order for mortality to occur a chopping blade would have to directly impact the root system, and the chances of a “direct hit” are low. Also, the distribution of LP within scrub stands are scattered and isolated – thus the chances of multiple individuals being directly affected by any chopping operations is even smaller.

Indirect effects

Harvest activities would result in an open environment with bare patches of ground present. Plants such as LP would benefit from increased sunlight penetration and decreased competition for sunlight. Roller-chopping would further heighten these beneficial conditions. Stands seeded with sand pine that resulted in high stocking levels might experience a shorter period of time in which conditions are suitable for vegetative growth and flowering than naturally regenerated stands with lower stocking rates.

Fire is a key component of this species’ natural history – it stimulates regeneration from seed, improves recruitment, and reduces competition (USFWS 2009). Prescribed burning for site preparation could potentially stimulate regeneration in the seed bank and provide other benefits should seed germination occur. Fire occurring during February – April could potentially consume (not kill) the aboveground biomass of LP individuals, but the population would benefit from increased germination and recruitment.

Cumulative effects

The proposed actions, when considered along with past, present, and reasonably foreseeable actions, would cumulatively benefit Lewton's Polygala by creating and maintaining suitable habitat. Continued scrub management (in both MAs 8.2 & 8.4) would help provide the early successional habitat for this species at the landscape level. No concurrent or future projects are anticipated to create additional effects or amplify effects already identified.

The effects determination for Lewton's Polygala is **may affect – likely to adversely affect**. There exists some potential for individuals to be killed by ground-penetrating equipment use. This species has scattered, isolated occurrence patterns in the action area and any effects are highly unlikely to be significant. This effect determination parallels the “may [adversely] effect” determination in the LRMP and in the Biological Assessment for Forest Plan Amendment 12.

4.8 Scrub Buckwheat (*Eriogonum longifolium* var. *gnaphalifolium*)

Effects of the Proposed Action

Direct effects

Although mature sand pine scrub does not provide ideal habitat conditions, Scrub Buckwheat has occasionally been found in mature sand pine scrub stands with an overstory. Scrub Buckwheat individuals located in such habitat may be impacted by harvest machinery, subsequent roller-chopping (either post-harvest or pre-burn), and OHV use, but the species has a woody taproot which would likely persist through such disturbance. “Numerous and widespread” Scrub Buckwheat plants described as “vigorous and blooming profusely” have been found in areas recently clearcut and roller-chopped (FNAI, unpublished report), therefore individuals are likely hardy enough to endure this amount of disturbance.

Scrub Buckwheat is known to exhibit resprouting, flowering, and strong seedling establishment after fire (Carrington 1999). As a result, the species responds vigorously for a year or two after the application of fire. Based on this close relationship with fire, consumption of the aboveground vegetative portions of the plant is unlikely to cause significant mortality in local or landscape scale populations. Instead, fire suppression would have more significant effects on the species.

Indirect effects

Harvest activities, roller-chopping, and prescribed burning would indirectly benefit scrub buckwheat by removing canopy cover, increasing open space, and decreasing competition. Stands seeded with sand pine in MA 8.2 that result in high stocking levels might experience a shorter period of time in which conditions are suitable for vegetative growth and flowering than naturally regenerated stands with lower stocking rates.

Cumulative effects

The proposed actions, when considered along with past, present, and reasonably foreseeable actions, would cumulatively benefit scrub buckwheat by creating and maintaining suitable habitat. Continued scrub management (in both MAs 8.2 & 8.4) would help provide the early successional habitat for this species at the landscape level. No concurrent or future projects are anticipated to create additional effects or amplify effects already identified.

The effects determination for Scrub Buckwheat is **may affect – likely to adversely affect**. There exists some potential for individuals to be killed by ground-penetrating equipment use. Mortality occurrence is expected to be insignificant due to the species' woody taproot and persistence after

fire. This effect determination parallels the “may [adversely] effect” determination in the LRMP and in the Biological Assessment for Forest Plan Amendment 12.

4.9 Scrub Pigeon-wing (*Clitoria fragrans*)

Effects of the Proposed Action

Direct effects

Scrub Pigeon Wings individuals have previously been found in habitat “that had not been burned in 30 years” (USFWS 1999b) in other locations, so individuals could exist in mature sand pine scrub habitat subject to a final timber harvest. Individuals in mature sand pine stands could be disturbed or killed by harvest activities, but the chances of this are insignificant due because: 1) there is low potential for occurrence in mature sand pine scrub; and 2) Scrub Pigeon Wings possesses a thick rhizome. This rhizome would protect it from disturbance during harvest activities, although aboveground vegetation may be crushed (NatureServe 2015).

There is little empirical information in the literature on the effects of mechanical disturbance on Scrub Pigeon Wings. Like many other species adapted to fire-prone habitats, Scrub Pigeon Wings possesses a long woody taproot (in addition to the rhizome) from which it resprouts after fire. The taproot can range from 0.5 to 2 meters (19.6-78.7 inches) in length and thus extends well beyond the 0.2-0.25 m (8-10 in.) that roller-chopper blades sink into the ground (NatureServe 2015). Roller-chopping prior to burning would mash down the scrub vegetation instead of crushing vegetation or coarse woody debris into small pieces, and thus the chopper blades would not penetrate the ground as deeply. While newly resprouted individuals that have not established a deep taproot could be subject to mortality, the main direct effect expected from roller-chopping and prescribed burning activities would be the crushing or consumption of the aboveground vegetative body.

Indirect effects

Harvest, roller-chopping, and prescribed burning activities would remove or reduce the canopy layer, increase areas of open bare ground, and decrease competition – conditions favorable to Scrub Pigeon Wings. Stands seeded with sand pine in MA 8.2 that result in high stocking levels might experience a shorter period of time in which conditions are suitable for vegetative growth and flowering than naturally regenerated stands with lower stocking rates.

Cumulative effects

The proposed actions, when considered along with past, present, and reasonably foreseeable actions, would cumulatively benefit scrub pigeon wings by creating and maintaining suitable habitat. Continued scrub management (in both MAs 8.2 & 8.4) would help provide the early successional habitat for this species at the landscape level. No concurrent or future projects are anticipated to create additional effects or amplify effects already identified.

The effects determination for Scrub Pigeon Wings is **may affect – likely to adversely affect**. There exists some potential for individuals to be killed by ground-penetrating equipment use. However, this species is adapted to disturbance and can persist via its thick rhizome and long taproot. This effect determination parallels the “may [adversely] effect” determinations in the Addendum to Biological Assessment for the LRMP and the Biological Assessment for Forest Plan Amendment 12.

5.0 DETERMINATION OF EFFECTS

Based on the preceding analysis of the effects on federally listed threatened and endangered species, I make the following determinations that the proposed actions will have the following effects:

5.1 Proposed Action: Management Action

- **May affect - likely to adversely affect** the Florida Scrub-Jay, Eastern Indigo Snake, Sand Skink, Florida Bonamia, Lewton's Polygala, Scrub Buckwheat, and Scrub Pigeon-Wing.

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7.0 FEDERALLY LISTED SPECIES NOT PRESENT

7.1 Florida Manatee (*Trichechus manatus*)

The Florida Manatee is an aquatic mammal that occurs in rivers, canals, estuaries, lagoons, and bays throughout central and southern Florida. No proposed activities occur in or near any of the listed bodies of water.

7.2 Red-cockaded Woodpecker (*Picoides borealis*)

No proposed treatment areas occur within any longleaf-wiregrass habitat, thus the project will have no impact on the Red-cockaded Woodpecker.

7.3 Wood Stork (*Mycteria americana*)

The wood stork is a large wading bird that occurs in wetland areas throughout Florida. Wood storks breed colonially in flooded freshwater and estuarine forested habitats. There are no flooded freshwater or estuarine forested habitats within the project area and therefore no proposed activities will impact the wood stork.

7.4 Britton's Beargrass (*Nolinabrittoniana*)

The Ocala National Forest only holds a small group of Britton's Beargrass individuals in the western section of the Forest Boundary. This occurrence of Britton's Beargrass is more than 9 miles from any forest stands proposed for treatment. Therefore it is reasonable to assume that no effects will occur from the purposed action.